

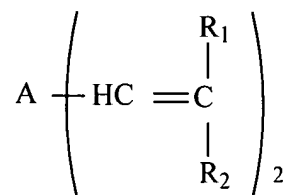
REMARKS

Claims 1, 6, and 8-15 remain in the application; Claims 16-45 have been canceled. Claim 1 is amended to emphasize distinctions over cited art.

Applicants appreciate that the rejections under 35 USC 112, second paragraph, have been withdrawn.

Claims 1, 6, 8, and 9 are rejected under 35 USC 102(b) as being anticipated by Van Allan et al (U.S. Patent 4,282,354).

Van Allan et al disclose an electrophoretic migration imaging process, involving materials having the structure



The materials are purportedly useful in electrophoretic migration imaging processes.

Applicants' Claim 1, as amended, recites

1. A bistable molecule for a multiple electrode device, said multiple electrode device comprising at least one pair of electrodes that form at least one junction and at least one said bistable molecule connecting said pair of electrodes in said junction, said junction having a functional dimension in nanometers or micrometers, said bistable molecule including at least one photosensitive, **photodecomposable** functional group, wherein said bistable molecule comprises a main chain and at least one pendant group and wherein at least one photosensitive, photodecomposable functional group is attached either to said main chain or to said pendant group, said bistable molecule exhibiting bistability irrespective of the presence or absence of said at least one photosensitive, photodecomposable group.  
(Emphasis added.)

The Examiner reproduces Table 1 from Van Allan and argues that the compounds listed therein anticipate the recited scope for the claimed bistable molecule.

First, the arguments presented with regard to Van Allan et al in Applicants' previous Amendment filed May 12, 2005, obtain here as well.

Second, the following exposition is provided for the benefit of the Examiner:

Applicants' invention is directed to how to make photo-patternable molecular circuitry. Van Allan et al is directed to electro-photography.

Van Allan et al disclose the use of some photosensitive chemicals to generate charges or change charge polarity of the molecules first. Then they use an electrophoretic method to migrate the photo-charged chemical to one of the surfaces to obtain an image. On the other hand, Applicants use their device molecules with photosensitive groups to deposit a film on electrodes first, and then expose portions of the bistable molecular film to irradiation (ultraviolet, electron-beam, or X-ray), decompose the exposed molecular material, and remove unwanted portions of the bistable molecular film to provide a photo-patterned molecular film after that.

The key difference is that the photo-sensitive materials of Van Allan et al are photo-*chargeable* materials, whereas Applicants' photosensitive materials are photo-*decomposable* materials. The molecules of Van Allan et al are merely electrically charged during the process and do not undergo material decomposition, whereas Applicants' molecules are changed to a completely new chemical species after exposure to the irradiation.

Another difference is that Van Allan et al use an electrophoretic method to generate a pattern for consumer printing or copying purpose, whereas Applicants use a conventional lithographic process incorporated with their novel photo-decomposable molecular device to generate molecular circuitry and use them for molecular electronics or molecular optics.

It does not matter whether or not the molecule of Van Allen et al is bistable or looks bistable; the molecules of Van Allen et al have totally different properties from Applicants' molecules, as well as totally different applications.

For the molecules of Van Allan et al, whether or not some portion of the molecule can rotate or twist is unimportant; all that those portions of the molecule do is to combine to form a certain permanent color with an easily chargeable structure, so that when they are electrically photo-charged, the photo-charged materials can undergo an electrophoretic migration from one electrode surface to another electrode surface to form an image. For Applicants' device molecules, intra-molecular twisting or rotation is their unique property imparted by electric-field (E-field) induced molecular switching. Both optical and electrical properties of the molecular device will be changed under the influence of an external electric field. Applicants use their unique method of patterning their molecular circuitry for their switchable molecular electronics applications.

Summarizing, Van Allan et al utterly fail to disclose or even remotely suggest a bistable molecule including at least one photosensitive, photodecomposable functional group. Applicants' Claim 1 is amended to distinguish the aspect of photodecomposition, as disclosed in, for example, paragraphs 0065, 0066, 0072, 0073, 0075, 0079, 0081, 0104, 0122, 0123, and 0136, as well as FIG. 6 and the text associated therewith.


Reconsideration of the rejection of Claims 1, 6, 8, and 9, as amended, under 35 USC 102(b) as being anticipated by Van Allan et al is respectfully requested.

The Examiner indicates that Claims 10-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants appreciate that these claims are allowable. Applicants, however, urge that the limitations now recited in Claim 1 render this claim allowable over each of Van Allan et al and Fay et al.

The application, as amended, is considered to be in condition for allowance. The Examiner is respectfully requested to take such action. If the Examiner has any questions, he is invited to contact the undersigned at the below-listed telephone number. HOWEVER, PLEASE CONTINUE TO ADDRESS ALL FURTHER WRITTEN CORRESPONDENCE TO: IP ADMINISTRATION, LEGAL DEPARTMENT, M/S 35, HEWLETT-PACKARD COMPANY, P.O. BOX 272400, FORT COLLINS, CO 80527-2400.

Respectfully submitted,

November 8, 2005

  
David W. Collins  
Reg. No. 26,857  
Attorney for Applicants

512 E. Whitehouse Canyon Road  
Suite 100  
Green Valley, AZ 85614

Telephone calls may be made to:  
(520) 399-3203